

WHAT IS CLAIMED IS:

1. A liquid crystal display apparatus for executing a display corresponding to display data to be inputted from the outside, comprising:

a display panel,

a light-source for illuminating said display panel, and

a controlling circuit for controlling light emitting time of said light source during one frame period of said display data in accordance with luminance information of said display data.

2. A liquid crystal display apparatus for executing a display corresponding to display data to be inputted from the outside, comprising:

a display panel,

a light-source for illuminating said display panel, and

a control circuit for varying light emitting luminance of said light source periodically in accordance with luminance information of said display data.

3. A liquid crystal display apparatus for executing a display corresponding to display data to be inputted from the outside, comprising:

a liquid crystal panel,

a light-source for illuminating said liquid crystal panel, and

a controlling circuit having a period, said period including a time having a 1st light-emission

103290 148886

luminance and a time having a 2nd light-emission luminance, said controlling circuit changing a time ratio of said 1st light-emission luminance and that of said 2nd light-emission luminance during said period in accordance with said display data.

4. The liquid crystal display apparatus as claimed in Claim 3, wherein

said time having said 1st light-emission luminance is longer than said time having said 2nd light-emission luminance, said controlling circuit controlling said time ratio of said 1st light-emission luminance in said period to be 50 % or smaller when said display data is a motion-frame picture, and to be 50 % or larger when said display data is a freeze-frame picture.

5. The liquid crystal display apparatus as claimed in Claim 3, wherein said 2nd light-emission luminance is equal to substantially 0.

6. The liquid crystal display apparatus as claimed in Claim 3, wherein said controlling circuit comprises:

a data storing unit for storing said display data by the amount of at least 1 frame,

a data comparing unit for comparing corresponding pixels between said display data stored in said data storing unit and said display data to be inputted, and

a pulse controlling unit for outputting a

signal in correspondence with a comparison result by said data comparing unit, said signal controlling said time ratio of said 1st light-emission luminance in said period.

7. The liquid crystal display apparatus as claimed in Claim 6, wherein said data storing unit employs, as a comparison pixel, a portion of all the pixels on said display panel so as to store said display data into said comparison pixel, said data comparing unit comparing said pixel data stored into said comparison pixel with said pixel data of said inputted data corresponding thereto.

8. The liquid crystal display apparatus as claimed in Claim 7, wherein said comparison pixel is located at a predetermined position in a display unit of said liquid crystal panel.

9. The liquid crystal display apparatus as claimed in Claim 3, wherein

said controlling circuit controls said time ratio of said 1st light-emission luminance and that of said 2nd light-emission luminance during said period in accordance with luminance information in said display data.

10. A liquid crystal display apparatus for executing a display in correspondence with inputted display data, comprising:

a liquid crystal panel,

a plurality of light-sources illuminating

000001-000001

said liquid crystal panel and having a period, said period including a 1st light-emission luminance and a 2nd light-emission luminance, and

a controlling circuit for changing a starting time of said 1st light-emission luminance and that of said 2nd light-emission luminance in accordance with said display data fed from the outside.

11. The liquid crystal display apparatus as claimed in Claim 10, wherein said controlling circuit comprises:

a data storing unit for storing said display data by the amount of at least 1 frame,

a data comparing unit for comparing corresponding pixels between said display data stored in said data storing unit and said display data to be inputted,

a mode judging unit for judging, in correspondence with a comparison result by said data comparing unit, in which display region many of motion-frame picture displays exist among display regions corresponding to said plurality of light-sources, and

a pulse controlling unit for outputting a signal toward each of said plurality of light-sources in accordance with a judgement result by said mode judging unit, said signal controlling said starting time of said 1st light-emission luminance and that of said 2nd light-emission luminance in said period.

12. The liquid crystal display apparatus as

0000041-062601

claimed in Claim 10, wherein said controlling circuit outputs a signal so that a time-period of said 2nd light-emission luminance will start immediately after a writing of said display data in a region has been terminated, said signal indicating said starting time and a time-period of said 1st light-emission luminance, said display data being varied most in said region among respective display regions on said liquid crystal panel, said respective display regions corresponding to said plurality of light-sources.

13. The liquid crystal display apparatus as claimed in Claim 10, wherein said 2nd light-emission luminance is equal to substantially 0.

14. A liquid crystal display apparatus for executing a display in correspondence with display data to be inputted, comprising:

a liquid crystal panel,

a light-source for illuminating said liquid crystal panel,

a luminance distribution detection controlling circuit for detecting, in accordance with said image data to be inputted, luminance distribution data by the amount of at least 1 frame of said image data, and

a tone controlling circuit for updating a set value in at least 1 specified tone position in accordance with said luminance distribution data, and for determining a tone characteristic between said updated

respective set values on a 1-frame basis with the use of a predetermined arithmetic-calculation formula.

15. The liquid crystal display apparatus as claimed in Claim 14, wherein the number of said specified tones and a spacing between said set tones, which are updated on the 1-frame basis with respect to a tone region, are settable values.

16. A liquid crystal display apparatus for executing a display in correspondence with image data to be inputted, comprising:

a liquid crystal panel,

a light-source for illuminating said liquid crystal panel,

a luminance distribution detection controlling circuit for detecting, in accordance with said image data to be inputted, luminance distribution data by the amount of at least 1 frame of said image data, and

a light-source controlling circuit for controlling at least either of a light-emission time-period and a light-emission time of said light-source in accordance with said luminance distribution data.

17. The liquid crystal display apparatus as claimed in Claim 16, wherein said light-source controlling circuit controls at least either of a pulse-width duty and a phase of a blink waveform for controlling said light-emission of said light-source.

18. The liquid crystal display apparatus as

claimed in Claim 16, wherein said light-source controlling circuit controls at least either of a pulse-width duty and a phase of a light-dimmer waveform for controlling said light-emission of said light-source.

19. The liquid crystal display apparatus as claimed in Claim 16, wherein said light-source controlling circuit controls said light-source light-emission time so that a light-source light-emission time for displaying image data becomes longer than a light-source light-emission time for displaying relatively darker image data, said image data being relatively brighter than predetermined image data.